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Ephemeris of the Fifth Satellite of Jupiter, 1893. **By A. Marth.**

Greenwich Noon.		P+90°	*a*	*b*	*l*−L.	Approx. Greenwich Times of greatest elongations.			
1893.		°	″	″	°	h	m	h	m
Aug.	4	76·87	48·37	+2·64	292·14	17	12 E	23	11 W
	6	76·97	48·65	2·66	297·29	17	2 ,,	23	0 ,,
	8	77·07	48·93	2·68	302·44	16	51 ,,	22	50 ,,
	10	77·17	49·22	2·70	307·61	16	41 ,,	22	40 ,,
	12	77·26	49·51	2·72	312·79	16	31 ,,	22	29 ,,
	14	77·35	49·80	2·74	317·98	16	20 ,,	22	19 ,,
	16	77·43	50·10	2·76	323·18	16	10 ,,	22	9 ,,
	18	77·51	50·41	2·78	328·39	16	0 ,,	21	58 ,,
	20	77·59	50·72	2·80	333·61	15	49 ,,	21	48 ,,
	22	77·66	51·04	2·83	338·85	15	39 ,,	21	38 ,,
	24	77·73	51·36	2·85	344·09	15	28 ,,	21	27 ,,
	26	77·80	51·68	2·87	349·34	15	18 ,,	21	17 ,,
	28	77·86	52·00	2·89	354·61	15	7 ,,	21	6 ,,
	30	77·91	52·33	2·91	359·89	14	57 ,,	20	56 ,,
Sept.	1	77·96	52·67	2·94	5·18	14	46 ,,	20	45 ,,
	3	78·01	53·00	2·96	10·48	14	36 ,,	20	34 ,,
	5	78·05	53·34	2·98	15·80	14	25 ,,	20	24 ,,
	7	78·08	53·68	3·00	21·12	14	15 ,,	20	14 ,,
	9	78·11	54·02	3·03	26·46	14	4 ,,	20	3 ,,
	11	78·14	54·36	3·05	31·81	13	53 ,,	19	52 ,,
	13	78·16	54·70	3·07	37·17	13	43 ,,	19	41 ,,
	15	78·17	55·05	3·10	42·54	13	32 ,,	19	31 ,,
	17	78·18	55·39	3·12	47·93	13	21 ,,	19	20 ,,
	19	78·19	55·73	3·14	53·32	13	10 ,,	19	9 ,,
	21	78·19	56·07	3·17	58·73	13	0 ,,	18	58 ,,
	23	78·18	56·41	3·19	64·15	12	49 ,,	18	47 ,,
	25	78·17	56·74	3·21	69·58	12	38 ,,	18	37 ,,
	27	78·15	57·07	3·23	75·02	12	27 ,,	18	26 ,,
	29	78·13	57·40	3·26	80·47	12	16 ,,	18	15 ,,
Oct.	1	78·10	57·72	3·28	85·94	12	5 ,,	18	4 W
	3	78·06	58·04	3·30	91·41	11	54 ,,	23	52 E
	5	78·03	58·35	3·32	96·89	11	44 ,,	23	41 ,,
	7	77·98	58·66	3·34	102·39	11	33 ,,	23	31 ,,
	9	77·93	58·96	3·36	107·89	11	22 ,,	23	20 ,,
	11	77·88	59·24	3·37	113·40	11	11 ,,	23	9 ,,
	13	77·82	59.52	+3·39	118·92	11	0 E	22	58 E

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Greenwich Noon.	P+90°	*a*	*b*	*l*−L.	Approx. Greenwich Times of greatest elongations.	
1893.	°	″	″	°	h m	h m
Oct. 15	77·76	59·79	+3·41	124·45	10 49 E	22 47 E
17	77·69	60·05	3·42	129·99	10 38 „	22 35 „
19	77·62	60·29	3·44	135·53	10 27 „	22 24 „
21	77·54	60·53	3·45	141·08	10 15 „	22 13 „
23	77·46	60·75	3·46	146·63	10 4 „	22 2 „
25	77·38	60·95	3·47	152·19	9 53 „	21 51 „
27	77·29	61·14	3·48	157·76	9 42 „	21 40 „
29	77·20	61·32	3·49	163·33	9 31 „	21 29 „
31	77·11	61·48	3·50	168·90	9 20 „	21 18 „
Nov. 2	77·02	61·62	3·51	174·47	9 9 „	21 7 „
4	76·92	61·75	3·51	180·05	8 58 „	20 56 „
6	76·82	61·86	3·51	185·63	8 47 „	20 45 „
8	76·72	61·95	3·52	191·20	8 36 „	20 33 „
10	76·62	62·02	3·52	196·78	8 24 „	20 22 „
12	76·52	62·07	3·51	202·35	8 13 „	20 11 „
14	76·41	62·11	3·51	207·92	8 2 „	20 0 „
16	76·31	62·12	3·51	213·49	7 51 „	19 49 „
18	76·20	62·11	3·50	219·05	7 40 „	19 38 „
20	76·10	62·09	3·49	224·60	7 29 „	19 27 „
22	76·00	62·05	3·48	230·15	7 18 „	19 16 „
24	75·90	61·98	3·47	235·70	7 7 „	19 5 „
26	75·80	61·90	3·46	241·23	6 56 „	18 53 „
28	75·70	61·80	3·45	246·76	6 45 „	18 42 „
30	75·60	61·68	3·43	252·28	6 34 E	18 31 „
Dec. 2	75·51	61·55	3·42	257·78	12 22 W	18 20 „
4	75·42	61·39	3·40	263·28	12 11 „	18 9 „
6	75·33	61·22	3·38	268·76	12 0 „	17 58 „
8	75·24	61·03	3·36	274·24	11 49 „	17 47 „
10	75·16	60·83	3·34	279·70	11 38 „	17 37 „
12	75·08	60·61	3·32	285·14	11 27 „	17 26 „
14	75·00	60·38	3·30	290·57	11 16 „	17 15 „
16	74·93	60·13	3·27	295·99	11 6 „	17 4 „
18	74·86	59·87	3·25	301·39	10 55 „	16 53 „
20	74·80	59·60	3·22	306·78	10 44 „	16 43 „
22	74·74	59·32	3·20	312·15	10 33 „	16 32 „
24	74·68	59·02	3·17	317·51	10 23 „	16 21 „
26	74·63	58·72	3·14	322·85	10 12 „	16 11 „
28	74·59	58·71	3·12	328·17	10 1 „	16 0 „
30	74·55	58·09	+3·09	333·48	9 51 W	15 50 E

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Greenwich Noon.		P+90°	a	b	l−L	Approx. Greenwich Times of greatest elongations.	
1894.		°	″	″	°	h m	h m
Jan.	1	74·51	57·76	+3·07	338·77	9 40 W	15 39 E
	3	74·48	57·43	3·04	344·05	9 30 ,,	15 29 ,,
	5	74·45	57·09	3·01	349·31	9 19 ,,	15 18 ,,
	7	74·43	56·74	2·98	354·55	9 9 ,,	15 8 ,,
	9	74·41	56·39	2·96	359·77	8 58 ,,	14 57 ,,
	11	74·39	56·04	2·93	4·98	8 48 ,,	14 47 ,,
	13	74·39	55·69	2·90	10·17	8 38 ,,	14 37 ,,
	15	74·38	55·33	2·87	15·35	8 27 ,,	14 26 ,,
	17	74·38	54·98	2·85	20·51	8 17 ,,	14 16 ,,
	19	74·39	54·62	2·82	25·66	8 7 ,,	14 6 ,,
	21	74·40	54·26	2·79	30·79	7 57 ,,	13 55 ,,
	23	74·42	53·90	2·77	35·90	7 47 ,,	13 45 ,,
	25	74·44	53·54	2·74	41·00	7 36 ,,	13 35 ,,
	27	74·46	53·19	2·71	46·09	7 26 ,,	13 25 ,,
	29	74·49	52·83	2·69	51·16	7 16 ,,	13 15 ,,
	31	74·53	52·48	2·66	56·21	7 6 ,,	13 5 ,,
Feb.	2	74·57	52·13	2·64	61·26	6 56 ,,	12 55 ,,
	4	74·61	51·78	+2·61	66·29	6 46 W	12 45 E

The rectangular coordinates x and y of the satellite in reference to the axes of *Jupiter's* disc, or its apparent distances from the polar axis and from the direction of the equatorial diameter of the disc, are found by

$$x = a \sin (l - \mathrm{L})$$
$$y = b \cos (l - \mathrm{L}),$$

where a and b denote the semi-axes of the apparent orbit and $l-\mathrm{L}$ the satellite's orbital longitude reckoned from the point which is in superior conjunction in reference to the Earth. The differences between successive values of $l-\mathrm{L}$ for an interval of two days vary between 1445°·03 and 1445°·58. The assumed daily rate of orbital motion is 722°·645, corresponding to a period of revolution of $11^{\mathrm{h}}\ 57^{\mathrm{m}}\ 21^{\mathrm{s}}{\cdot}88$, the uncertainty of which is probably within a second of time, and will be reduced to a fraction by the first trustworthy measurements of x made at a sufficient distance both before and after a greatest elongation. The position-angle P+90° of the equatorial diameter of the disc is added, as it is desirable that the rectangular coordinates of the satellite should be measured in the computed directions of the axes of the disc.

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